



# United States Patent [19]

Sugihara et al.

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## [54] CELL POTENTIAL MEASUREMENT APPARATUS HAVING A PLURALITY OF MICROELECTRODES

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[58] Field of Search ..... 435/287.1, 288.7, 435/289.1; 324/447, 692; 204/403; 356/36, 246

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## [57] ABSTRACT

A cell potential measurement apparatus, which uses a planar electrode enabling a multi-point simultaneous measurement of potential change arising from cell activities, is provided which can conduct measurements accurately and efficiently as well as can improve convenience of arranging measurement results. According to the configuration of the cell potential measurement apparatus of this invention, it includes an integrated cell holding instrument, which includes a planar electrode provided with a plurality of microelectrodes arranged in a matrix form on the surface of a substrate, a cell holding part for placing cells thereon, drawer patterns from the microelectrodes, and electric contact points for outside connections; an optical observation means for optical observations of cells; a stimulation signal supply means to be connected to the cell holding instrument for providing electric stimulation to the cells; and a signal processing means to be connected to the cell holding instrument for processing an output signal arising from electric physiological activities of the cells. It is preferable that a cell culturing means is also provided for maintaining a culture atmosphere of the cells placed on the integrated cell holding instrument.

13 Claims, 12 Drawing Sheets

